A2575-8-4

Reported Fire Losses In The Petroleum Industry For 1987

Safety and Fire Protection Department

JUNE 1988

American
Petroleum
Institute

SUMMARY OF REPORTED FIRE LOSSES IN THE PETROLEUM INDUSTRY FOR 1987

The American Petroleum institute's fifty-seventh survey of fire losses in the petroleum industry represents the collective experience of 90 companies. These companies reported a total of 244 fires for 1987. Fire loss events resulting in less than $2500 total loss per event are not included in the number of events reported.

Table 1 summarizes the Number of Fires Reported for 1986 and 1987, by the number of events, by function, in aggregate for all functions, and other parameters. A list of the participating companies in the 1987 survey is provided beginning on page 4 of this report.

Table 2 relates only to Tank Fire Experience, summarizing a total of 49 tank fires reported by 17 companies responding to the 1987 survey. As in Table 1, only events resulting in losses of $2500 or more per event were requested to be reported.

NOTE: Company participation in the Fire Loss Survey is voluntary and fluctuates from year to year.

Additional copies of this report may be obtained by contacting:

American Petroleum Institute
Publications & Distribution Section
1220 L Street, N.W.
Washington, D.C. 20005
(202) 682-8375

TABLE 1

NUMBER OF FIRES REPORTED FOR 1987

Classes of Property by Function	Function Key[1]	Year	Originating on Oil Company Properties: Confined to Property	Originating on Oil Company Properties: Spread to Other Property	Originated Outside But Spread to Oil-Company Property	No. $2.5K to $100K Loss	No. $100K to $1M Loss	No. over $1M Loss	Total Number of Fires
Exploration, Production and Drilling	abd	1986	92	2	0	70	24	0	94
		1987	75	0	0	62	11	2	75
Gas Processing	c	1986	24	0	0	19	5	0	24
		1987	8	0	0	5	3	0	8
Subtotal	abcd	1986	116	2	0	89	29	0	118
		1987	83	0	0	67	14	2	83
Offshore Portion of Above[2]	abd	1986	1	0	0	1	0	0	1
		1987	9	0	0	6	2	1	9
Petrochemical Manufacturing	e	1986	16	0	0	8	7	1	16
		1987	13	0	0	10	3	0	13
Refining	f	1986	106	0	0	69	28	9	106
		1987	80	0	0	50	27	3	80
Marketing-Wholesale	g	1986	12	0	1	10	3	0	13
		1987	20	0	1	18	2	1	21
Marketing-Retail	h	1986	20	0	0	20	0	0	20
		1987	31	0	0	28	3	0	31
Marketing-Subtotal[3]	gh	1986	32	0	1	30	3	0	33
		1987	51	0	1	46	5	1	52
Pipeline Liquid and Gas	ij	1986	6	0	0	4	2	0	6
		1987	7	0	0	5	2	0	7
All Others		1986	5	0	0	4	1	0	5
		1987	8	1	0	3	6	0	9
All Properties		1986	281	2	1	204	70	10	284
		1987	242	1	1	181	57	6	244

[1]Keyed to definitions outlined in the API Fire and Safety Data System User's Manual.
[2]Offshore Portion entries are a subset of abcd above; they are not additional events.
[3]Subtotal of Marketing Wholesale and Retail

NOTES: 90 companies participated in the survey for 1987. A list of those companies appears on page 4.

The reporting of fires for 1987 was restricted to those fires resulting in losses of $2,500 or more.

The Offshore Portion is not included in the totals.

TANK FIRE EXPERIENCE IN 1987

17 companies responded to a questionnaire on fires originating in tanks, resulting in losses of $2,500 or more per fire. Reports on such fires in 1987 are summarized in Table 2. A total of 49 fires in this category were reported for 1987. These fires involved 61 tanks.

Of the tanks affected in 1987, 41 stored crude oil.

By type of tank involved in fires, 52 had cone roofs, and 3 were of the dome roof type.

Of a total of 61 tanks involved, 47 were located on producing properties, 10 at refineries, 2 in pipeline operations, and 0 at bulk plants and terminals.

TABLE 2

TANK FIRE EXPERIENCE IN 1987 and 1986

Fires Originating in Tanks Resulting in Losses of $2,500 or More

Number of Tanks Involved in Fires

Structural Type of Tank

	Floating Roof																			
	Pantograph Seal		Tube Seal		Internal		Total		Cone Roof		Dome Roof		Sphere & Spheroid		Horizontal		Other Types		Total	
	1986	1987	1986	1987	1986	1987	1986	1987	1986	1987	1986	1987	1986	1987	1986	1987	1986	1987	1986	1987
By Class of Product:																				
Crude Oil	2	0	2	1	2	0	6	1	13	36	11	2	0	0	1	0	0	2	31	41
Products:																				
Under 100 F Flash	0	0	0	1	0	0	0	1	0	5	0	0	0	0	0	0	1	0	1	6
100-200 F Flash	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Over 200 F Flash	0	1	0	0	0	0	0	1	1	7	2	1	0	0	0	0	0	0	3	9
LNG/LPG	0	0	0	1	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	4
Total	2	1	2	3	2	0	6	4	14	52	13	3	0	0	1	0	1	2	35	61
By Location:																				
Producing Properties	2	0	2	0	2	0	6	0	12	43	10	2	0	0	0	0	1	2	29	47
Pipeline Operations	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	1	2
Refineries	0	1	0	2	0	0	0	3	1	6	1	1	0	0	0	0	0	0	2	10
Bulk Plants & Terms.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Other Locations	0	0	0	1	0	0	0	1	0	1	2	0	0	0	0	0	0	0	2	2
Total	2	1	2	3	2	0	6	4	14	52	13	3	0	0	1	0	1	2	35	61
Total Number of Fires Involving Tanks (regardless of number of tanks involved).....																			35	49

LIST OF RESPONDENTS 1987 FIRE LOSS REPORT

COMPANY

1. Alabama - Tenn. Natural Gas Co.
2. Amber Refining Inc.
3. American Petrofina Inc.
4. Amoco Oil Corp.
5. Ashland Petroleum Corp.
6. Atlantic Energy Inc.
7. Bath Petroleum Storage Inc.
8. BHP Petroleum (A)
9. BP North America Petroleum Inc.
10. Buckeye Pipe Line Co.
11. Caddo Pine Island Corp.
12. Calcasieu Refining Co.
13. Celeron Corp.
14. Chase Transportation Co.
15. Chevron USA Inc.
16. Cibro Petroleum Products Inc.
17. Cities Service Oil & Gas Corp.
18. Clark Oil & Refining Corp.
19. Coastal Oil Co.
20. Coastal Refining & Marketing Inc.
21. Colonial Pipe Line Co.
22. Colorado Refining Co.
23. Columbia Gas Transmission Corp.
24. Cross Oil & Refining Co.

LIST OF RESPONDENTS (continued)

COMPANY

25. Daylight Engineering Co.
26. DeNovo Oil & Gas Co.
27. E. E. Fogelson
28. ENOGEX Products Corp.
29. Enserch Exploration Inc.
30. Equity Oil Co.
31. Exxon Company USA
32. Farmland Industries Inc.
33. Flying J. Petroleum Co.
34. GAMXX Energy Inc.
35. Hellman Properties
36. Hewit & Dougherty
37. JOB Operating Co.
38. KN Energy Inc.
39. Kaneb Pipe Line Co.
40. Kentucky Hydrocarbon Co.
41. Kerr McGee Corp.
42. KPL Gas Service
43. Lakehead Pipe Line Co.
44. Lakeside Refining Co.
45. Lario Oil & Gas Co.
46. Lion Oil Co.
47. Llano Inc.
48. Locust Ridge Gas Co.

LIST OF RESPONDENTS (continued)

COMPANY

49. Lomita Gasoline Co.
50. Lone Star Gas Co.
51. MAPCO Petroleum Inc.
52. Mississippi Valley Gas Co.
53. Mobil Research & Development Corp.
54. Murphy Oil USA Inc.
55. National Helium Corp.
56. Ohio Oil Gathering Corp.
57. Oklahoma Natural Gas Co.
58. Paramount Petroleum
59. Pennzoil Co.
60. Pennzoil Products Co. - Roosevelt Refinery
61. Peoples Natural Gas Co.
62. Plantation Pipe Line Co.
63. Portal Pipe Line Co.
64. Portland Pipe Line Co.
65. Powerline Oil Co.
66. Pride Refining Inc.
67. Producers Gas Equities Inc.
68. Robinson Interests Inc.
69. Santa Fe Energy Co.
70. Skaer Enterprises Inc.
71. Somerset Refining Inc.
72. South Kentucky Purchasing Co.

LIST OF RESPONDENTS (continued)

COMPANY

73. Southland Oil Co.
74. Sun Company Inc.
75. Tauber Oil Co.
76. Tenneco Oil Co.
77. Texaco Inc.
78. Thriftaway Co. Inc.
79. TOSCO Corp.
80. Total Petroleum Inc.
81. True
82. U. S. Oil and Refining Co.
83. Union LP Gas System Inc.
84. UNOCAL
85. Union Pacific Resources Inc.
86. United Refining Co.
87. Valero Energy Corp.
88. Vulcan Refining Co.
89. Western Gas Processors Inc.
90. Witco Chemical Corp.

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Reported Fire Losses In The Petroleum Industry For 1988

MAY 1989

American Petroleum Institute
1220 L Street, Northwest
Washington, D.C. 20005

Reported Fire Losses In The Petroleum Industry For 1988

Safety and Fire Protection Department

MAY 1989

American
Petroleum
Institute

SUMMARY OF REPORTED FIRE LOSSES IN THE PETROLEUM INDUSTRY FOR 1988

The American Petroleum Institute's fifty-eighth annual survey of fire losses in the petroleum industry represents the collective experience of 64 companies. These companies reported a total of **193** fires for 1988. Fire loss events resulting in less than $2,500 total loss per event are not included in the number of events reported.

Table I summarizes the Number of Fires Reported for 1988 and 1987 by the number of events, by function, in aggregate for all functions, and other parameters. A list of the participating companies in the 1988 survey is provided on pages 4 and 5 of this report.

NOTE: **Company participation in the API annual fire loss survey is voluntary and fluctuates from year to year.**

Additional copies of this survey may be obtained by contacting the API Publications & Distribution Section at (202) 682-8375.

TABLE 1

NUMBER OF FIRES REPORTED FOR 1988

Classes of Property by Function	Function Key[1]	Year	Originating on Oil Company Properties: Confined to Property	Originating on Oil Company Properties: Spread to Other Property	Originated Outside But Spread to Oil-Company Property	No. $2.5K to $100K Loss	No. $100K to $1M Loss	No. over $1M Loss	Total Number of Fires
Exploration, Production and Drilling	abd	1987	75	0	0	62	11	2	75
		1988	54	0	1	48	7	0	55
Gas Processing	c	1987	8	0	0	5	3	0	8
		1988	22	0	0	17	5	0	22
Subtotal	abcd	1987	83	0	0	67	14	2	83
		1988	76	0	1	65	12	0	77
Offshore Portion of Above[2]	abd	1987	9	0	0	6	2	1	9
		1988	4	0	0	3	1	0	4
Petrochemical Manufacturing	e	1987	13	0	0	10	3	0	13
		1988	2	0	0	1	0	1	2
Refining	f	1987	80	0	0	50	27	3	80
		1988	51	0	0	35	14	2	51
Marketing-Wholesale	g	1987	20	0	1	18	2	1	21
		1988	9	1	0	5	5	0	10
Marketing-Retail	h	1987	31	0	0	28	3	0	31
		1988	28	0	2	28	2	0	30
Marketing-Subtotal[3]	gh	1987	51	0	1	46	5	1	52
		1988	37	1	2	33	7	0	40
Pipeline Liquid and Gas	ij	1987	7	0	0	5	2	0	7
		1988	21	0	0	20	1	0	21
All Others		1987	8	1	0	3	6	0	9
		1988	2	0	0	2	0	0	2
All Properties		1987	242	1	1	181	57	6	244
		1988	189	1	3	156	34	3	193

[1]Keyed to definitions outlined in the API Fire and Safety Data System User's Manual.
[2]Offshore Portion entries are a subset of abcd above; they are not additional events.
[3]Subtotal of Marketing Wholesale and Retail

NOTES: 64 companies participated in the survey for 1988. A list of those companies appears on page 4.

The reporting of fires for 1988 was restricted to those fires resulting in losses of $2,500 or more.

The Offshore Portion is not included in the totals.

TANK FIRE EXPERIENCE IN 1988

9 companies responded to a questionnaire on fires originating in tanks, resulting in losses of $2,500 or more per fire. Reports on such fires in 1988 are summarized in Table 2. A total of 31 fires in this category were reported for 1988. These fires involved 41 tanks.

Of the tanks affected in 1988, 28 stored crude oil.

By type of tank involved in fires, 22 had cone roofs, and 0 were of the dome roof type.

Of a total of 41 tanks involved, 25 were located on producing properties, 5 at refineries, 2 in pipeline operations, and 0 at bulk plants and terminals.

TABLE 2

TANK FIRE EXPERIENCE IN 1988 and 1987

Fires Originating in Tanks Resulting in Losses of $2,500 or More

Number of Tanks Involved in Fires

Structural Type of Tank

	Floating Roof																			
	Pantograph Seal		Tube Seal		Internal		Total		Cone Roof		Dome Roof		Sphere & Spheroid		Horizontal		Other Types		Total	
	1987	1988	1987	1988	1987	1988	1987	1988	1987	1988	1987	1988	1987	1988	1987	1988	1987	1988	1987	1988
By Class of Product:																				
Crude Oil	0	0	1	0	0	1	1	1	36	17	2	0	0	0	0	0	2	10	41	28
Products:																				
Under 100 F Flash	0	1	1	0	0	2	1	3	5	4	0	0	0	0	0	0	0	0	6	7
100-200 F Flash	0	0	0	0	0	1	0	1	1	1	0	0	0	0	0	0	0	0	1	2
Over 200 F Flash	1	0	0	0	0	0	1	0	7	0	1	0	0	0	0	0	0	4	9	4
LNG/LPG	0	0	1	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	4	0
Total	1	1	3	0	0	4	4	5	52	22	3	0	0	0	0	0	2	14	61	41
By Location:																				
Producing Properties	0	0	0	0	0	0	0	0	43	11	2	0	0	0	0	0	2	14	47	25
Pipeline Operations	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0	0	0	0	2	2
Refineries	1	1	2	0	0	2	3	3	6	2	1	0	0	0	0	0	0	0	10	5
Bulk Plants & Terms.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Locations	0	0	1	0	0	0	1	0	1	9	0	0	0	0	0	0	0	0	2	9
Total	1	1	3	0	0	4	4	5	52	22	3	0	0	0	0	0	2	14	61	41
Total Number of Fires Involving Tanks (regardless of number of tanks involved).....																			49	31

LIST OF RESPONDENTS - 1988

	Key	Name
1.	00007	AMERICAN PETROFINA INC.
2.	00161	ARCADIA REFINING CO.
3.	00013	ASHLAND OIL, INC.
4.	00191	BHP PETROLEUM (A)
5.	00015	BP NORTH AMERICA PETROLEUM INC.
6.	00017	BUCKEYE PIPE LINE CO.
7.	00020	CALCASIEU REFINING CO.
8.	00021	CELERON CORP.
9.	00211	CHASE TRANSPORTATION CO.
10.	00187	CLARK OIL & REFINING CORP.
11.	00029	COLONIAL PIPELINE CO.
12.	00006	COLORADO REFINING CO.
13.	00033	COOK INLET PIPE LINE CO.
14.	00195	CROSS OIL & REFINING CO.
15.	00217	CROWN CENTRAL PETROLEUM CORP.
16.	00182	E.I.L. PETROLEUM INC.
17.	00037	EL PASO NATURAL GAS CO.
18.	00001	ENERFIN GAS PROCESSING CORP.
19.	00205	ENOGEX INC.
20.	00122	ENRON LIQUID FUELS CO.
21.	00041	EXXON COMPANY U.S.A.
22.	00185	FLYING J PETROLEUM CO.
23.	00193	FUEL RESOURCES DEVELOPMENT
24.	00048	HEWIT & DOUGHERTY
25.	00159	HUDSON REFINING CO. INC.
26.	00055	KANEB PIPE LINE CO.
27.	00058	KERR-MCGEE CORP.
28.	00054	KN ENERGY INC.
29.	00062	LARIO OIL & GAS CO.
30.	00201	LLANO INC.
31.	00218	MAPCO ALASKA PETROLEUM INC.
32.	00215	MERIDIAN OIL CO.
33.	00071	MISSISSIPPI VALLEY GAS CO.
34.	00075	MURPHY OIL USA INC.
35.	00175	NATIONAL COOP REFINERY ASSN.
36.	00083	OHIO OIL GATHERING CORP.
37.	00027	OXY USA INC.
38.	00131	PANHANDLE EASTERN PIPE LINE CO.
39.	00087	PARAMOUNT PETROLEUM CORP.
40.	00088	PENNZOIL CO.

41.	00091	PLANTATION PIPE LINE CO.
42.	00092	PORTAL PIPE LINE CO.
43.	00192	POWERINE OIL CO.
44.	00176	PRIDE REFINING INC.
45.	00094	PRODUCERS GAS EQUITIES, INC.
46.	00095	PUBLIC SERVICE CO. OF COLORADO
47.	00101	SOMERSET REFINERY INC.
48.	00102	SONAT EXPLORATION CO.
49.	00103	SOUTH KENTUCKY PURCHASING CO.
50.	00138	SOUTHLAND OIL CO.
51.	00107	SUN COMPANY, INC.
52.	00005	SUN EXPLORATION & PRODUCTION CO.
53.	00009	TEXACO INC.
54.	00111	TEXAS EASTERN PRODUCTS & PIPE LINE CO.
55.	00162	TEXAS GAS TRANSMISSION CORP.
56.	00181	THRIFTAWAY MARKETING CO.
57.	00113	TRUE
58.	00114	TRUNKLINE GAS CO.
59.	00116	U.S. OIL & REFINING CO.
60.	00118	UNION OIL CO. OF CALIFORNIA
61.	00121	UNITED REFINING CO.
62.	00188	VULCAN REFINING CO.
63.	00126	WILLIAMS PIPE LINE CO.
64.	00127	WITCO CHEMICAL CORP.

Order No. 852 - 19989